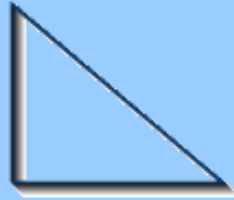


# The Way Things Work

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Boroondara Park P.S.



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## Introduction

Your group has been invited to make a guest appearance on **'The New Inventors'** program (ABC, Wednesday 8:30pm). The program has been re-vamped! It is introducing a new segment where children are asked to present an invention along with a patent application. The panel will select the invention that can be used in either the kitchen, bathroom or the garden to make life easier.

Your invention will be showcased at the Boroondara Park P.S. Inventors Expo to be held on Wednesday, June 18 in the school hall.

## Task

There will be **five** parts to your challenge;

1.  Create a Mind Map that is continually added to.
2. **Research** different types of simple machines and the patent process
3. **Design** a complex machine and apply for a patent
4. **Construct** a complex machine
5. **Present** your invention and evaluate your performance.

You need to assign a leader to each part of the challenge. You need to assign the roles of **Researcher, Designer, Construction Manager and Presenter**. The leader will be responsible for keeping the group on track, allocating tasks and reporting to the Patent Attorney on the groups progress.

## Resources

### TERM PLANNER

### INVESTIGATIONS

#### WEBSITES

[FRANKLIN INSTITUTE: Simple Machines](#)

[EDHEADS: Simple Machines](#)

[BRAINPOP: Simple Machines](#)

[FLYING PIG: Mechanisms](#)

[Inventor's Toolbox - The Elements of Machines: Simple Machines](#)

[The Inclined Plane](#)

[The Screw](#)

[The Wedge](#)

[Data Sheets](#)

#### VIDEOS

[Push & Pull - Simple Machines at Work](#)

[Exploring Leonardo Homepage](#)

(VIDEO, 20 mins)

[ABC - The Inventors](#)

The Secret Life of Machines - Radio, Video Recorder, Telephone, Quartz Watch (VIDEO)

[How to Mind Map](#)

[Habits of Mind Website](#)

**'The New Inventors'** program (ABC, Wednesday 8:30pm)

[Tony Ryan's Thinkers Keys](#)

## BOOKS

'Learn About the World of Physics' Series

Wheel, Pulleys and Gears & Levers - Connections 5

'How It Works Series'

## SOFTWARE

**The Way Things Work** Dorling Kindersley, London, 1998

**Pinball Science** Dorling Kindersley, London

**The Encyclopedia of Science** Dorling Kindersley, London

**THINKIN' SCIENCE ZAP! The Science of Light, Sound and Electricity**  
EDMARK, Australia, 1999

## OTHER...

SIMPLE MACHINES KITS - Science Store

Gears Kit - Science Store

Pulleys - Science Store

## SPEAKERS

Patent and Trade Mark Attorney - Mr Marcus Bolger

## Process

**Before you begin any part of the challenge, your group needs to compose a set of guidelines or rules that each member of your group agrees to abide by. Use the [cooperative skills rubric](#) as a guide.**

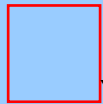
## **Stage One**

Firstly, each member of the group must begin the construction of their 'The Way Things Work' Mind Map. The Mind Map will be the tool through which you record what you currently know about machines and energy and anything you learn along the way. *Each member will produce their own Mind Map.*

## **Stage Two**

Secondly, *as a group*, you need to use the resources to **RESEARCH** different types of simple machines (lever, wedge, inclined plane, pulley, screw and wheel and axle). You will read about them, see animations of them in action, and see how they have already been used in other people's inventions. You will also use the simple machines kits to **conduct experiments** using each simple machine. You will also need to investigate the application process for a patent. The things you learn through this research will be recorded on your Mind Map.

## **Stage Three**



Your group must use the [INVENTION KEY](#) to **DESIGN** an invention (complex machine) and apply for a patent. The invention must include at least two of the simple machines you discovered. It must meet the appropriate specifications. The [Invention Specification List](#) details what dimensions your invention must fit and the list of materials that are permitted for use.

Your group will submit the designs of your proposed invention and a [Invention Application Form](#) to the "PATENT ATTORNEY." The design needs to be drawn from three different perspectives. The [Design Specification List](#) details the criteria for each diagram. When it is approved you will build a working model of your invention.

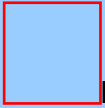
## **Stage Four**

Your group must use the [CONSTRUCTION KEY](#) and your designs to **CONSTRUCT** your invention. Don't forget to test your invention as you go and make the necessary changes and record any new understandings on your mind map.



## Stage Five

Each member of the group will need to record the steps taken to construct your invention as a procedural text. Use the [Procedural Text Checklist](#) to help you plan and write.



Before your group presents, please make sure you have met all the criteria;


- the invention will make life easier in either the kitchen, bathroom or garden
- the invention fits the specified dimensions
- the invention has been constructed using the appropriate materials
- the invention has been tested and the necessary changes have been made
- the patent application and designs are complete and ready for submission

## Stage Six

Finally, your group will **PRESENT** your invention and patent application to 'The Patent Attorney' and the producers of 'The New Inventors.' They will decide whether your invention and patent application have met the criteria.

## Evaluation

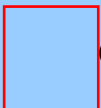
There are four stages to the Evaluation process.

1.  Your group will now use [The Cooperative Skills Rubric](#) to evaluate each person's contribution to the task.
2. Each member of the group will complete a [Thinkers Cross](#). This along with a digital photo of your invention need to be linked to your personal webpage
3. Complete your Mind Map



1. Attend a group conference with the Patent Attorney. At this conference the Patent Attorney will check that you have completed all the required tasks.
2. Submit your procedural text. This will be assessed using the [Procedural Text Rubric](#)

## Conclusion

 Congratulations. You have now earned the title of "Inventor".

